

**INDIAN BUREAU OF MINES  
MINERALS DEVELOPEMMENT AND REGULATION DIVISION**

**MCDR inspection REPORT**

**Goa regional office**

**Mine file No :** MAH/KLP/BX-14/GOA

**Mine code :** 07MSH13017

- (i) Name of the Inspecting : **K04** ) **DR. Y.G.KALE**  
Officer and ID No.
- (ii) Designation : Regional Controller Mines
- (iii) Accompanying mine : **SHRI. V.K.S.CHAUHAN, MINES MANAGER**  
Official with  
Designation
- (iv) Date of Inspection : 21-FEB-19
- (v) Prev.inspection date : 07-MAY-18

**PART-I : GENERAL INFORMATION**

1. (a) **Mine Name** : **DHANGARWADI**
- (b) **Registration NO.** : **IBM/935/2011**
- (c) Category : A Fully Mechanised
- (d) Type of Working : Opencast
- (e) Postal address
- State : MAHARASHTRA
- District : KOLHAPUR
- Village : DHANGARWADI
- Taluka : DHANGARWADI
- Post office : SHAHUWADI
- Pin Code : 416514
- FAX No. : 02320-215301
- E-mail : mainak\_c@adityabirla.com
- Phone : 02320-202072
- (f) Police Station : SHAHUWADI
- (g) First opening date : 27-APR-09
- (h) Weekly day of rest : SUN
2. Address for : HINDALCO INDUSTRIES LIMITED  
correspondance : DHANGARWADI MINES, SHAHUWADI 416 212  
KOLHAPUR DISTRICT, MAHARASHTRA
3. (a) Lease Number : MSH0371
- (b) Lease area : 41.8
- (c) Period of lease : 50
- (d) Date of Expiry : 04-MAY-58
4. Mineral worked : BAUXITE Main

## 5. Name and Address of the

Lessee : HINDALCO INDUSTRIES LIMITED  
 Ahura Centre,1st Floor,B  
 wing,MC Rd Andheri  
 (East),Mumbai MAHARASHTRA  
 MUMBAI (SUBURBAN)  
 MAHARASHTRA  
 Phone:022-66917000  
 FAX :022-66907001

Owner : A.K.AGARWALA  
 AHURA CENTRE, 1ST FLOOR, B  
 WING, MC ROAD, ANDHERI  
 (EAST), MUMBAI MAHARASHTRA  
 MUMBAI (SUBURBAN)  
 MAHARASHTRA  
 Phone: 022-66917000  
 FAX : 022-66907001

Agent : MAINAK CHAKRABORTY  
 HINDALCO INDUSTRIES LTD  
 P.O. RADHANAGARI, KOLHAPUR-  
 MAHARASHTRA KOLHAPUR  
 MAHARASHTRA  
 Phone: 02321-202133  
 FAX :

## Mining Engineer

Name : V.K.S. Chauhan, Full Time  
 Qualification : B.Tech. Mining  
 Appointment/ : 01-APR-13  
 Termination date

## Geologist

Name : U,V.PAWAR, Full Time  
 Qualification : M.Sc.Geology  
 Appointment/ : 26-MAR-12  
 Termination date

## Manager

Name : VIJAYKUMAR SINGH CHAUHAN  
 Qualification : B. Tech. Mining with FCC  
 Appointment/ : 01-APR-13  
 Termination date

|   |   |                                |           |
|---|---|--------------------------------|-----------|
| 6. Date of approval of Mining Plan/Scheme of Mining | : | Modif.of approved Mining Plan  | 25-MAR-09 |
|   |   | Mining Scheme rule 12 MCDR1988 | 02-DEC-13 |
|   |   | Modif.approved Mining Scheme   | 12-MAR-15 |
|   |   | MP modif under 17(3) MCR 2016  | 08-JUL-16 |
|   |   | MP review under 17(1) MCR 2016 | 01-DEC-17 |

## PART - II : OBSERVATION/COMMENTS OF INSPECTING OFFICERS

## Exploration :

| Sl.No. | Item  | Proposals   | Actual work  | Remarks   |
|--------|---|---|--|---|
| 1a     | Backlog of previous year  | Two boreholes and three trial pits were proposed in the year 2017-18. | Lessee has drilled three boreholes and made 33 trial pits.   | Additional trial pits were made in the slope area to prove the float ore.   |
| 1b     | Exploration over lease area for geological axis 1 or 2              | 2.00 ha   | About 2.0 ha in insitu deposit and 16 ha in float deposit.   | In addition to insitu deposit exploration through 33 trial pits were made in the slopes covering 16.00 ha to prove the float ore deposit. |
| 1c     | Exploration Agencies and Expenditure in lakh rupees during the year |   | Exploration was carriedout by lessee only. Rs.56100/-  |   |
| 1d     | Balance area to be explored to bring Geological axis in 1 or 2      | Two boreholes were proposed in the year 2017-18.                      | Lessee has drilled three bore holes in the year 2017-18 covering an area of about 2.00ha and additionally lessee has made 33 trial pit covering an area of 16.00ha in the slope area to prove the float ore deposit.                               |   |
| 1e     | Balance reserve as on 01/04/20                                      |   | Reserves as on 01.04.2018.<br><br>Probable Mineral Reserves (121) Insitu ore- 2,08,964.281 tonnes<br><br>Float ore:-<br>68,349.41 tonnes<br>Feasibility Mineral Resources (211) Insitu ore :- 34,125 tonnes<br><br>Float ore:-<br>21,966.59 tonnes |   |

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| 1f | General remarks of inspecting officers on geology, exploration etc | Bauxite deposit of Dhargarwadi are of two types. Viz. Insitu Blanket deposit and float ore. After lease grant, lessee has drilled 32 DTH holes in the insitu deposit and about 55 trial pits were made in the float ore. The entire mineralized area is explored under G-1 level. |
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Development :

| Sl.No. | Item   | Propasals  | Actual work  | Remarks   |
|--------|--|--|--|---|
| 2a     | Location of development w.r.t.lease area                       | N-16o 54'18.5" to 16o 54'29.5" and 16o 54'18.5" to 16o 54'26.1",<br>E-73o 50'40" to 73o 50'58" and 73o 50'40" to 73o 51'7" | N-16o 54'18.5" to 16o 54'28.2" and 16o 54'18.5" to 16o 54'25",<br>E-73o 50'40" to 73o 50'48" and 73o 50'40" to 73o 51'4" | Location of development is as per the proposal of approved mining plan. |
| 2b     | Separate benches in topsoil, overburden and minerals (Rule 15) | Bauxite -01, Topsoil -01 and OB-01   | Bauxite -01, Topsoil -01 and OB-01, Avg. ht in Bauxite-5 to 6 mtr  |   |
| 2c     | Stripping ratio or ore to OB ratio                             | 1:0.23   | 1:0.39   |   |
| 2d     | Quantity of topsoil generation in m3                           | 33006  | 40498  |   |
| 2e     | Quantity of overburden generation in m3                        | Nil  | 43,855   |   |

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| 2f | General remarks of inspecting officers on development of pit w.r.t. type of deposit etc | In order to achieve conservation of minerals, dry screening of float ore is carried out. The -12mm material is considered as waste. Therefore, 43,855 cum quantity is generated during 2017-18 as waste. |
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Exploitation:

| Sl.No. | Item  | Propasals  | Actual work   | Remarks |
|--------|---|--|---|---------|
| 3a     | Number of pit proposed for production                             | 02 pits  | 02 pits   |         |
| 3b     | Quantity of ROM mineral production proposed                       | 303565 tonnes  | 2,91,705 tonnes ( 2,73,368 tonnes from float ore and 18,337 from waste recovery). |         |
| 3c     | Recovery of sailable/usable mineral from ROM production           | 80%  | 82%   |         |
| 3d     | Quantity of mineral reject generation                             | 24,748 t   | 18,337 t  |         |
| 3e     | Grade of mineral rejects generation and threshold value declared. | Al <sub>2</sub> O <sub>3</sub> -44% and SiO <sub>2</sub> -10-12% | Al <sub>2</sub> O <sub>3</sub> -40-45% and SiO <sub>2</sub> -10 -15%              |         |
| 3f     | Quantity of sub grade mineral generation.                         | NA   | NA  |         |
| 3g     | Grade of sub grade mineral generation                             | NA   | NA  |         |
| 3h     | Manual / Mechanised method adopted for segregating from ROM       | Mechanised.  | Mechanised. Conventional Mining is practised.                                     |         |

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| 3i | Any analysis or beneficiation study proposed and carried out for sub grade mineral and rejects.      | Nil  | Nil  |
| 3j | Provision of drilling and blasting in mineral benches  | Yes  | Conventional drilling and blasting is practiced in insitu zone. Atlas Copco drill machine with 105mm diameter is deployed for drilling blast hole. |
| 3k | Provision of mining machineries in mineral benches   | Yes  | HEMM deployed in the mineral benches as per the proposal.  |
| 3l | Whether height of benches in overburden and mineral suitable for method of mining proposed in MP/SOM | Yes  | Bench height is maintained at 5 to 6 mtr   |
| 3m | Total area covered under excavation/pits   | 11.0Ha   | 11.3Ha   |
| 3n | Ore to OB ratio for the pit/mine during the year.  | 1:0.23   | 1:0.39   |
| 3o | Total area put in use under different heads at the end of year                                       | Area of excavation-28.09Ha, Waste dump-1.73Ha, Infrastructure -0.5Ha, Roads-0.75Ha and others-0.13Ha.                                  | Area of excavation-24.31Ha, Waste dump-Nil, Infrastructure-0.5Ha, Roads-0.75Ha and others-0.13Ha.  |
| 3p | Production of ROM mineral during the last five year period as applicable                             | 2013-14<br>550000 tons<br>2014-15<br>452586 tonnes<br>2015-16<br>501043 tonnes<br>2016-17<br>382519 tonnes<br>2017-18<br>303565 tonnes | 2013-14<br>429797 tonnes<br>2014-15<br>406500 tonnes<br>2015-16<br>389737 tonnes<br>2016-17<br>362270 tonnes<br>2017-18<br>291705 tonnes           |

3q General remarks of inspecting officers on method of mining etc. Overall the mining operations are carried out in scientific manner as per the proposals of approved mining plan.

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Solid Waste Management - Dumping:

| Sl.No. | Item   | Propasals | Actual work  | Remarks   |
|--------|--|-----------|--|---|
| 4a     | Separate dumping of topsoil, OB and mineral rejects (Rule 32,33)   | Yes       | yes  | The topsoil and OB stacked temporary in dumps is rehandlled and used for mine restoration directly. Presently the mining activities is being carried out in float bearing area. |
| 4b     | Location of topsoil, OB and mineral reject dumps                   |           | There is no such dumps are made during the year, all the soil and reject or waste are being utilized for backfilling of mined out voids . The backfilled areas are being scientifically vegetated through afforestation. |   |
| 4c     | Number of dumps within lease area and outside of lease area        | Nil       | Nil  |   |
| 4d     | Location of dumps w.r.t. ultimate pit limit (Rule 16)              | Nil       | Not applicable   |   |
| 4e     | Number of active and alive dumps.                                  | Nil       | Nil  |   |
| 4f     | Number of dead dumps.  | Nil       | Nil  |   |
| 4g     | Number of dumps established.                                       | Nil       | Not applicable   |   |
| 4h     | Whether Retaining wall or garland drain all along dumps are there. | Nil       | Not applicable   |   |

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| 4i | Length of Retaining wall or garland drain all along dumps        | Nil | Not applicable |   |
| 4j | Number of settling ponds   | Nil | Not applicable | The run-off mine is channelised towards initially constructed settling tanks and silt check dams.   |
| 4k | Specific comments of inspecting officer on waste dump management |     |                | There is no separate planning required for waste management as the entire waste material is being filled back in the mined out area simultaneously. |

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Solid Waste Management - Backfilling:

| Sl.No. | Item  | Propasals                     | Actual work     | Remarks   |
|--------|---|-------------------------------|-----------------|---|
| 5a     | Status of part or full extraction of mineral from mined out area before starting backfilling. | Yes                           | Yes             | The area is taken up for restoration only after removal of entire bauxite in the specific area. |
| 5b     | Area under backfilling of mined out area  | 4.41Ha                        | 5.00Ha          | During the year 2017-18, 9000 saplings have been planted to cover 5.00 ha.                      |
| 5c     | Concurrent use of topsoil for restoration or rehabilitation of mineral out area (Rule 32)     | Full utilisation of top soil. | Fully utilised. |   |
| 5d     | Total area fully reclaimed and rehabilitated  | Nil                           | 13 Ha           | Cumulative area reclaimed.  |



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| 5e | General remarks of inspecting officers on backfilling and reclamation etc. | Simultaneous reclamation and rehabilitation has been practiced in mined out areas. The reclamation and rehabilitation is carried out in scientific way by using soil corrective measures and special plants over slopes. |
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Progressive Mine Clousre Plan:

| Sl.No. | Item   | Propasals                             | Actual work  | Remarks |
|--------|--|---------------------------------------|--|---------|
| 6a     | Whether Annual report on PMCP submitted on time and correctly. Rule 23 E(2).                               |                                       | Annual report on PMCP for the year 2017-18 is submitted by the lessee on 25/06/2018. |         |
| 6b     | Area available for rehabilitation (ha) .   | 4.41ha                                | 5.00ha   |         |
| 6c     | afforestation done (ha).   | 4.41 ha                               | 5.00ha   |         |
| 6d     | No. of saplings planted during the year  | 4500                                  | 9000   |         |
| 6e     | Cumulative no .of plants   |                                       | 37000  |         |
| 6f     | Any other method of rehabilitation   | Backfilling with subsequent platation | Backfilling with subsequent platation.   |         |
| 6g     | Cost incurred on watch and care during the year  | 55,000                                | 2,21,653   |         |
| 6h     | Compliance on reclamation and rehabilitation by backfilling (i) Voids available for backfilling ( Lx B x D | 800m * 125m * 0.37m                   | 800m * 125m * 0.4m   |         |

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| 6i | Compliance on reclamation and rehabilitation by backfilling (ii) Voids filled by waste / tailings         | 33006.72 Cum | 84353.47cum  |
| 6j | Compliance on reclamation and rehabilitation by backfilling (iii) Afforestation on backfilled area        | 4.41 ha      | 5.00 ha  |
| 6k | Compliance on reclamation and rehabilitation by backfilling (iv) Rehabilitation by making water reservoir | Nil          | Not applicable   |
| 6l | Compliance on reclamation and rehabilitation by backfilling (v) any other specific means.                 | Nil          | Not applicable   |
| 6m | Compliance of rehabilitation of waste land within lease (i) afforestation                                 | Nil          | Not applicable   |
| 6n | Compliance of rehabilitation of waste land within lease (ii) Area rehabilitation (ha)                     | Nil          | Not applicable   |
| 6o | Compliance of rehabilitation of waste land within lease (iii) Method of rehabilitation                    | Nil          | Not applicable   |
| 6p | Compliance of environmental monitoring (core zone and buffer zone)  |              | The monitoring is carried out as per the schedule through approved third party and reports are maintained. |

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| 6q | General remarks of inspecting officers on PMCP compliance and progressive closure operations etc. | The various provisions as enumerated in the approval PMCP are being implemented in the mine. |
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Mineral Conservation:

| Sl.No. | Item   | Propasals                             | Actual work   | Remarks                                     |
|--------|--|---------------------------------------|---|---|
| 7a     | ROM Mineral dispatch or grade-wise sorting within lease area                           | 45% to 50% Al2O3 and 40% to 45% Al2O3 | 45% to 50% Al2O3 and 40% to 45% Al2O3   | ROM has been sorted by crushing/screening . |
| 7b     | Method of grade-wise mineral sorting i.e. manual or mechanical.                        | Mechanical                            | Mechanical  |   |
| 7c     | Different grade of mineral sorted out at mines.  | 45% to 50% Al2O3 and 40% to 45% Al2O3 | 45% to 50% Al2O3 and 40% to 45% Al2O3   |   |
| 7d     | Any beneficiation process at mines .   | Dry screening                         | Dry screening   |   |
| 7e     | General remarks of inspecting officer on Mineral conservation and beneficiation issues |                                       | Float ore being sorted out as ROM. Grade wise sorting has been carried out by crushing/screening. |   |

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Environment:

| Sl.No. | Item  | Propasals | Actual work | Remarks  |
|--------|---|-----------|-------------|--|
| 8a     | Separate removal and utilization of topsoil (Rule 32) | Yes       | Yes         | Presently mining activities are restricted to float bearing area only, where soil is levelled after exploitation of bauxite boulders simultaneously. |

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| 8b | Concurrent use or storage of topsoil  | Yes  | The soil generated during float ore mining is used for levelling the worked out area.  |   |
| 8c | Separate dumps for overburden, waste rock, rejects and fines (Rule 33)                                      |  | All the OB and waste are being utilized for backfilling of mined out voids.  |   |
| 8d | Use of overburden, waste rock, rejects and fines dumps for restoring the land to its original use           | Use of overburden, soil and waste for backfilling of mined out area. | All the OB, soil and waste are being utilized for backfilling of mined out voids and the backfilled area are being scientifically vegetated through afforestation. |   |
| 8e | Phased restoration, reclamation and rehabilitation of lands affected by mining operations (Pits, dumps etc) | Yes  | Restoration/Reclamation of the mined pits are being done as per the plan.  |   |
| 8f | Baseline information on existence of plantation and additional plantation done (Rule 41)                    |  | Mined out area are scientifically afforested. For this soil, manure , vermi compost, bagasse and press-mud being used to improve the condition of the plant base.  |   |
| 8g | Survival rate   |  | 90%  | Care has been taken to plant mostly local flora along with some exotic species. |
| 8h | Water sprinkling on roads to control airborne dust  |  | Water tanker mounted trucks are being used for dust suppression.   |   |

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| 8i | General remarks of inspecting officer on aesthetic beauty in and around mines area | The lessee is regularly monitoring the environmental parameters. These are observed to be within permissible limits. Water tanker mounted trucks are used for dust suppression along the haul roads. Further, simultaneous reclamation and rehabilitation has been practiced in mined out areas. |
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Compliance of Rule 45:

| Sl.No. | Item  | Propasals  | Actual work  | Remarks |
|--------|---|--|--|---------|
| 9a     | Status of submission of Monthly and Annual returns  |  | Lessee is regularly submitting Monthly and Annual returns.                                       |         |
| 9b     | Scrutiny of Annual return for information on Mining Engineer, Geologist and Manager           | In the annual returns submitted for the year 2017-18, Mining Engineer and Manager is shown as-Mr. V. K. S. Chauhan, Geologist-Mr. U.V. Pawar.                              | As per the office records the information provided on Mining Engineer and Geologist are correct. |         |
| 9c     | Scrutiny of Annual return on land use pattern for area under pits, reclaimed area, dumps etc. | Already exploited & abandoned by opencast (O/C) mining-24.309 Ha, Covered under current (O/C) Workings- 11.30Ha, Reclaimed/Rehabilitated- 13.00Ha, Infrastructure -1.25Ha. | Found in order.  |         |
| 9d     | Scrutiny of Annual return on afforestation  | 9000 within the lease area.  | Verified and almost found correct.   |         |

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|----|---|--|--|--|
| 9e | Scrutiny of Annual return on mineral reject generation (Grade and quantity) | Nil  | Nil  |  |
| 9f | Scrutiny of Annual return on ROM stock and/or graded ore                    | About 9906.730 tonnes of cement grade ore is shown as the closing stock.   |  |  |
| 9g | Scrutiny of Annual return on sale value, Ex. Mine price and production cost | Ex-mine price for metal grade is shown as Rs, 596.54/tonne and for cement grade ex-mine price is shown as Rs, 675/tonne and cost of production Rs- 596.54/tonne. | The ex-mine price of lower grade bauxite is shown more than the ex-mine price of Metal grade ore. The ex-mine price of lower grade ore cannot be higher than the metal grade ore. Further the sale value of domestic sale of 41143.300 tonnes bauxite to M/s Ultratech Cement Limited is indicated as Rs. 2,77 lakhs instead of 2.77 crores. | Violation is pointed out for the same. |
| 9h | Scrutiny of Annual return on fixed assets                                   | Value of Fixed Assets in Rs. 3144655   |  |  |
| 9k | Scrutiny of Annual return on mining machineries                             | BACK HOE-04, SHOVEL (HYDRAULIC) - 05, DUMPER-08, WHEEL LOADER-02, BLAST HOST DRILL-02, AIR COMPRESSOR-02 and CRUSHER-02  |  |  |

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**Details of violations observed during current inspection and compliance position of violation pointed out**

| Violation observed |                 |               | Show cause position |           |               |
|--------------------|-----------------|---------------|---------------------|-----------|---------------|
| Rule NO.           | Issued on       | Compliance on | Rule NO.            | Issued on | Compliance on |
| MCDR17             | Rule 45 (7) (a) | 27-FEB-19     |                     |           |               |

**Date :**

**(DR. Y.G.KALE)**

Indian Bureau of Mines